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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/029,556	12/20/2001	Hiroshi Matsuura	NAGAT43.001AUS	4692

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EXAMINER

VALENCIA, DANIEL E

ART UNIT PAPER NUMBER

2874

DATE MAILED: 01/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/029,556

Applicant(s)

MATSUURA ET AL.

Examiner

Daniel E Valencia

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Specification

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Inventorship

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3, and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by

Takahashi U.S. Patent No. 5,692,081. Refer to the appropriate drawings or parts of the

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specification. Takahashi discloses a four-polarization maintaining optical fiber ferrule and optical coupler using the same that discloses the limitations of the abovementioned claims.

Regarding claim 1, Takahashi discloses an optical device (fig 1 and 4), that could inherently be used for a multiplexer/demultiplexer (col. 9, lines 13-16), wherein an optical fiber (12), attached to a ferrule (F1, F2), for receiving and outputting light, a lens (24 and 25) member and an optical component (26) are optically coupled, said ferrule being formed of synthetic resin and having at least one hole (fig 1) formed therein. Takahashi further discloses that a plurality of optical fibers are inserted in said at least one fiber hole (fig 2b), as mentioned in instant claim 3. Referring to claim 19, Takahashi's disclosure depicts that the ferrule has a step (20) portion formed thereon.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 4-10 14-18, 20, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi in view of Hellman U.S. Patent No. 6,343,166. Refer to the appropriate drawings or parts of the specification. Takahashi as applied above, discloses an optical device, which can inherently be used to multiplex and demultiplex signals, with most of the limitations of the present invention (including claims 18, 20, and 21 see fig. 1, ref 20); however, the reference lacks some of the limitations of the dependent claims.

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On the other hand, Hellman discloses a fiber optic device with a joined fiber subassembly that teaches the limitations that the Takahashi reference lacks. Regarding claims 2 and 4, Hellman teaches an optical multiplexer/demultiplexer, wherein said ferrule is formed of cylindrical shape, a plurality of fiber holes are formed and a pitch between adjoining fiber holes is set to less than 250 um (col. 5, lines 40-bottom), and wherein the plurality of fibers are disposed therein (fig 1C). Although it is well known to polish the end face of a ferrule and a fiber within said ferrule at an angle to minimize back reflections, Hellman teaches the limitation and its advantages (col. 6, lines 34-40), as described in claims 14-17. Referring to claims 5-7, Takahashi discloses an outer jacket for holding the ferrule, within the jacket. Although it would be an obvious limitation to make the jacket from metal, Hellman discloses that a jacket made of metal is provided outside said ferrule (fig. 3, ref 32 and col. 5, line 21). Both references disclose optical devices for coupling a plurality of fibers using multi-bore ferrules to lenses and optical filtering devices. Further, Hellman teaches that it is advantageous to use angled end faces and a pitch less than 250um (col. 5). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Takahashi with Hellman to arrive at the present invention.

Regarding claims 8-10, although the references do not explicitly state that the resin ferrule is made by injection molding, this limitation is non-critical and would produce the device disclosed by Takahashi and Hellman. In addition, if the technique of injection (or insert) molding is well known in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use insert molding to form the ferrule disclosed in Takahashi and Hellman.

Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi and Hellman in view of Umeki Japanese Patent No. JP 61070521 A. Refer to the appropriate drawings or parts of the abstract. Takahashi and Hellman as applied above, disclose an optical multiplexer with a majority of the limitations of the present invention. However, the references fail to disclose that the ferrule and jacket have a rotation preventing means.

On the other hand, Umeki discloses a fixed optical attenuator with the same general structure of the device disclosed by Takahashi and Hellman, ferrule disposed in a sleeve etc, that teaches the limitation that the references lack. Regarding the instant claims, Umeki discloses that the ferrule in the alignment sleeve have a rotation preventing means (“whirl stop”) to prevent rotation of the ferrule within the sleeve (see abstract and drawing 2). Umeki discloses a similar device structure to the device disclosed by the combination of Takahashi and Hellman. Further, Umeki teaches that it is advantageous to have a rotation preventing means, because it allows the ferrule to be fixed in the sleeve (abstract). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use rotation-preventing means in the device disclosed by Takahashi and Hellman.

Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi in view of Fukushima U.S. Patent No. 6,048,102. Refer to the appropriate drawings or parts of the specification. Takahashi as applied above discloses a device with all of the limitations of the independent claim; however the reference fails to teach that the ferrule is formed into a quadratic prism.

On the other hand, Fukushima discloses an optical connector with a ferrule disposed within a jacket, wherein the ferrule is formed into a quadratic prism (see fig 11 and col. 6, lines 60-bottom). Fukushima teaches that it is advantageous to use a ferrule shaped as a quadratic prism, because it fits inside a rectangular shaped sleeve. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a quadratic prism shaped ferrule.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Williams U.S. Patent No. 4,989,946 discloses a fiber optic switch with a multi-bore ferrule disposed within a jacket.

Takahashi U.S. Patent No. 5,682,452 discloses an optical fiber ferrule for coupling to a lens and an optical device.

Brun 2002/0081066A1 discloses a method of matching optical elements and fiber ferrules, wherein a ferrule is coupled to a lens and an optical element at an angle.

Liu U.S. Patent No. 6,498,876 discloses a multi-port optic device with v-groove ferrule, wherein the ferrule is disposed within a jacket.

Pan U.S. Patent No. 6,249,625 discloses a fiber optic device with a joined optical fiber subassembly, wherein optical fibers are disposed within a plurality of holes in the ferrule spaced less than 250 um apart.

Yamaguchi U.S. Patent No. 6,435,731 discloses a method of forming a ceramic ferrule using well-known injection molding techniques.

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Edwards U.S. Patent No. 5,751,875 discloses an optical fiber ferrule disposed within a jacket, wherein the ferrule has rotation preventing means.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel E Valencia whose telephone number is (703)-305-4399. The examiner can normally be reached on Monday-Friday 9:30-6:00.

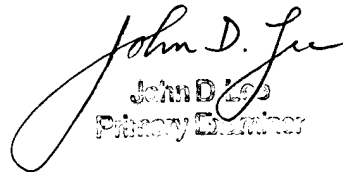
The fax phone numbers for the organization where this application or proceeding is assigned are (703)-308-7724 for regular communications and (703)-308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)-308-0956.



dv

January 21, 2003



John D. Lee
John D. Lee
Primary Examiner